



Hertfordshire County Council

Network Management Strategy

2023 – 2028

1 Introduction

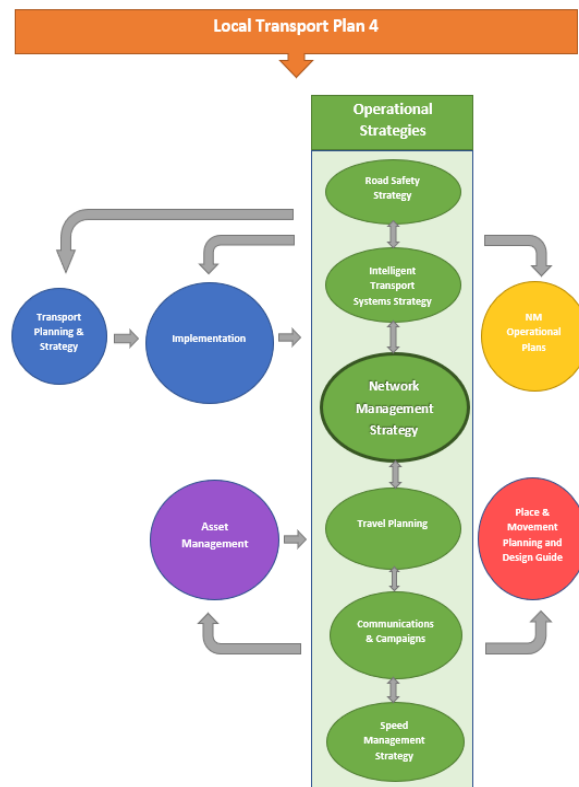
- 1.1 The highway network provides one of the most important and valuable public facilities for Hertfordshire and it is continuously occupied for place, movement, and asset management purposes. The competing and sometimes conflicting demands for use of the highway far outstrips its capacity and, therefore the network needs to be managed actively.
- 1.2 Hertfordshire County Council's Traffic Manager and supporting Network Management Team (NM Team) are responsible for managing the network in a demonstrably fair, inclusive, and transparent way ensuring compliance with Local Transport Plan Policies, DfT's Gear Change Policy and the 2004 Traffic Management Act (TMA), which imposes the Network Management Duty (NMD) on highway authorities.

- 1.3 Under the NMD HCC is required to identify potential causes (including making future predictions) of road congestion or other disruption to the movement of all modes of travel on Hertfordshire's network. With this information it aims to apply appropriate mitigation measures and monitor their effectiveness.
- 1.4 HCC also has a statutory duty under Section 130 of the Highways Act to assert and protect the rights of the public to the use and enjoyment of, and prevent so far as possible, the unauthorised stopping up of, encroachment or obstruction of, any part of the Public Highway. As such, many features and activities within the highway require prior approval from HCC, which is given through the granting of a licence or other approval.
- 1.5 HCC issues permits through the East of England Permit Scheme to ensure works are co-ordinated, controlled and recorded. These permits are required in addition to any entitlements to undertake works secured through Section Agreements with HCC under the Highways Act. Details of the scheme can be found at:
- <https://www.hertfordshire.gov.uk/services/highways-roads-and-pavements/business-and-developer-information/permit-scheme/east-of-england-permit-scheme.aspx>
- 1.6 HCC operates a state-of-the-art Integrated Transport Control Centre (ITCC) that monitors and manages the network in real-time, providing information to all users of the highway, other traffic authorities and the media.
- 1.7 This Network Management Strategy sets out how Hertfordshire's highway network will be managed in a fair, inclusive, and transparent way

2 Policy Context

- 2.1 LTP4 supports HCC's Corporate Plan (2022-25) and its 4 key themes of **opportunity**, which are all dependent upon effective operation of the highway network:
- A cleaner and greener environment
 - Healthy and fulfilling lives for our residents
 - Sustainable, responsible growth in our county
 - Excellent council services for all
- 2.2 The Network Management Strategy aims to balance the needs for Place, Movement and Asset Management in accordance with the priorities set by the LTP and in compliance with the TMA and in doing so will manage the network to:
- Facilitate activities on the highway that make those local town centres and residential streets with a high Place function attractive and vibrant
 - Facilitate safe and expeditious movement of all travel modes in accordance with the transport user hierarchy set out in LTP Policy 1.

- Ensure infrastructure and associated temporary works in or adjacent to the highway are planned and designed to minimise disruption and inconvenience to highway users during construction and, subsequently when the infrastructure is used and maintained.
- Keep priority routes open during periods of adverse weather in accordance with Network Management Operational Plans.



- 2.3 LTP4 aligns with DfT's 2020 Gear Change strategy that promotes the priority for active travel.
- 2.4 This Network Management Strategy complements LTP4 as a supporting document and, in turn influences a range of allied operational strategies, Network Management operational plans and Hertfordshire's Place & Movement Planning and Design Guide (P&MPDG).
- 2.5 The strategy aims to help optimise the proposed outcomes from transport plans, strategies, and the resulting transport schemes through active management of the network, whilst also minimising disruption during the construction of those schemes and associated with asset management works.
- 2.6 In turn, the understanding of local network operation and the needs of its users influences the development of transport planning, transport and asset management strategies and their resulting schemes.
- 2.7 The NM team will also keep the detailed guidance on network management issues held within the P&MPDG up to date and relevant.

- 2.8 The many uses of the highway can be considered to fall within one of three categories, viz: - Place, Movement and Asset Management.
- 2.9 Streets with a high Place function are high streets, town squares and some residential streets which have features that encourage people walking and cycling to stop, rest, socialise and use local facilities.
- 2.10 The Movement category captures the function of all travel modes passing and repassing along the highway.
- 2.11 The Asset Management category acknowledges that the highway needs to be managed whilst it is occupied for the purposes of improving or maintaining infrastructure in or adjacent to the highway. Typical assets are the highway assets themselves, private utilities and adjacent properties that require temporary use of the highway for construction or maintenance purposes.
- 2.12 In accordance with HCC's NM Duty, the strategy also aims to facilitate the expeditious movement on networks for which HCC is not the traffic authority by working with the Highways Agency and adjacent authorities

3 Network Management to Support the Sense of Place

- 3.1 A sense of place is important to supporting the economy, encouraging social and healthy well-being within local communities.
- 3.2 Hertfordshire's active network management will help deliver a good sense of place whilst sensitively considering the safety needs of all users and the competing demands of all those wanting to use the limited highway space.
- 3.3 The following table sets out the Network Management Strategy relating to LTP4 policies that are particularly connected to Place.

Place Related Policies

LTP Policy	Network Management Strategy
Policy 1: Transport User Hierarchy	Reduce the needs for people to travel out of town and encourage active travel from reducing the domination by motor vehicles by managing the network to facilitate attractive and vibrant local town centres and streets.
Policy 4: Demand Management	Working in partnership with the District and Borough Councils to support them to manage on-street vehicle parking and enforcement of parking restrictions to reduce demand, thereby reducing the domination by motor vehicles.
Policy 16: Freight and Logistics	Monitor changes in HGV and LGV activity to inform possible solutions which reconcile the need of access for goods and services with local environment and social concerns. Utilise traffic management powers, where appropriate to do so, to manage access and egress from specific locations, introduce restricted routes and restrict loading and unloading.
Policy 20: Air Quality	Reduce the impact of poor Air Quality on human health by managing and enforcing access controls for areas of high place value and, in particular, Air Quality Management Areas.
Policy 21: Environment	Ensure the impacts of traffic on the natural, built and historic environment are minimised and the quality of public spaces both in urban and rural areas are protected and enhanced through the application of traffic management controls. Minimise the visual intrusion from unnecessary street clutter. Help reduce noise issues through traffic management controls that reinforce the designated Place & Movement function, highway classification and network hierarchy

3.4 Active network management will support a sense of place through particular initiatives including, as appropriate:

- The licencing of tables and chairs for café's, A-Boards, hoardings, filming, planting, memorials, shrines, and local signage
- Enabling the advertising of fairs and circuses
- Enabling play streets and the holding of events on the highway such as

street parties

- Enabling festive and special event lighting
- The management of vehicle access
- The management of vehicle parking and enforcement of parking restrictions in partnership with the District Councils
- Controlling proliferation of fly posting, graffiti, and unauthorised advertising

- 3.5 Further details on licence applications can be found at:
<https://www.hertfordshire.gov.uk/services/highways-roads-and-pavements/business-and-developer-information/business-licences/business-licences.aspx>
- 3.6 Events on the highway are managed via the District Councils, who are the primary contact for events on the highway and are managed through Safety Advisory Groups (SAGs). HCC support will be provided to the SAGs through advice and guidance on how to run an effective and successful event by minimising network disruption and maximise network safety for event attendees and other network users affected by the event. It should be noted that there are no powers that enable a member of public to direct traffic during planned events. Accordingly, most events will need to make use of traffic a traffic management company and possibly network closures to direct traffic. HCC will consider event promoters using marshals that have been certified to manage traffic
- 3.7 Whilst initiatives that promote a sense of place are generally welcomed, when and where highway space is particularly limited, priority will be given to the needs of those walking, cycling, or waiting at passenger transport facilities. In particular, adequate space for the free movement of prams and wheelchair users will be protected in support of LTP Policy 6: Accessibility.
- 3.8 Promoters of developments and new transport schemes are encouraged to consider the place needs of their proposals at the master planning stage to ensure that there will be adequate highway space to accommodate those needs alongside the space required for movement and asset management purposes.
- 3.9 HCC prioritises its winter service operations and does not grit all its roads during icy periods. HCC does not provide new grit bins, although it does provide salt to organised self-help groups. Promoters of developments and new highway scheme should consult the NM team and give due consideration to how access within their proposed public realm is to be maintained safely during periods of snow and ice. More details can be found at:
<https://www.hertfordshire.gov.uk/services/highways-roads-and-pavements/roadworks-and-road-closures/severe-weather/severe-weather.aspx>



4 Network Management to support Movement

- 4.1 The Movement function of the highway is the particular focus of the TMA and the Network Management Duty which are aimed at ensuring the expeditious movement of all travel modes on the highway as far as possible.
- 4.2 DfT's Gear Change and LTP4 Policy 1 place a priority on active travel (walking and cycling) over passenger transport and thence other motor vehicle traffic.
- 4.3 The following table sets out the Network Management Strategy related to LTP4 policies that are particularly connected to Movement.

Movement Related Policies

Policy	Network Management Strategy
Policy 1: Transport User Hierarchy	Use understanding of local network operation and the needs of its users to identify and influence traffic management strategies and schemes to promote network efficiency and reflect the transport user hierarchy. Manage the network by prioritising the movement of traffic according to the appropriate P&M category and in accordance with Policy 1 of the LTP.

	Focus on journey time reliability for motorised vehicular movement. Maintain or reduce the number of congestion hotspots on P1/M3 and P2/M3 designated roads, without compromising the user hierarchy. Working in partnership with the District Councils manage on-street vehicle parking, including controlling verge parking and introducing clearways as appropriate, and enforce parking to promote network efficiency and reflect the transport user hierarchy. Review traffic signal timings at junctions and crossings to optimise efficiency and ensure priorities reflect the transport user hierarchy. Undertake camera enforcement of moving traffic and bus lane contraventions to improve the quality and accessibility of passenger transport and managing and reconciling the competing demands for road space Manage applications for dropped kerbs to enable people to park on their own property in accordance with Part 3 Chapter 9 of the P&MPDG.
Policy 4: Demand Management	Working in partnership with the District Councils manage on-street vehicle parking, including verge parking, and enforce parking restrictions to reduce demand thereby reducing the domination by motor vehicles and improving opportunity for sustainable travel. Reduce levels of single occupancy car use and encourage travel by walking, cycling and passenger transport
Policy 6: Accessibility	Working in partnership with District Councils and the Police address the physical barriers to accessibility by controlling occupation of the highway through licencing, permitting and enforcement. Manage applications for Disabled parking bays and H-bar markings in accordance with Part 4 Chapter 16 of the P&MPDG.
Policy 7: Active Travel – Walking	Working in partnership with District Councils and the Police address the physical barriers to active travel by controlling occupation of the highway through licencing, permitting and enforcement

Policy 8: Active Travel - Cycling	Promote networks of walking and cycling routes through effective signage
Policy 9: Buses	Working with District Council and Police partners manage bus priority measures and minimise bus service disruption from road congestion by: • Setting signal timings to favour buses on the priority bus network • Ensuring efficient operation and enforcement of bus lanes and other supporting measures such as camera enforcement and rising bollards • Undertaking camera enforcement of bus lanes and gates
Policy 15: Speed Management	Use understanding of local network operation and the needs of its users to influence the implementation of the Speed Management Strategy, including speed limit reviews, aimed at managing the network to achieve appropriate speeds in the interests of safety, other road users, and the environment.
Policy 16: Freight and Logistics	Use understanding of local network operation and the needs of its users to identify and influence schemes that encourage HGVs to use the primary route network. Monitor changes in HGV and LGV activity to inform possible solutions which reconcile the need of access for goods and services with local environment and social concerns. Utilise traffic management powers, where appropriate to do so, to manage access and egress from specific locations.
Policy 17: Road Safety	Contribute to the 'Safe Systems' approach that seeks to co-ordinate a mix of safer roads, safer speeds, safer vehicles, safer road users and post-collision response with a focus on casualty reduction. Prepare and implement an annual Winter Operational Service Plan to keep priority routes open during periods of snow and ice. The aim of the plan, accessed by the following link, is to and prioritise all A roads, bus routes and one route into and out of villages. https://www.hertfordshire.gov.uk/services/highways-roads-and-pavements/roadworks-and-road-closures/severe-weather/severe-weather.aspx

	Undertake camera enforcement to improve road safety road safety
Policy 18: Transport Safety and Security	Use understanding of local network operation and the needs of its users to identify and influence on-highway measures to mitigate threats such as pandemics or terrorism.
Policy 19: Emissions reduction	In partnership with the District Councils facilitate the roll out of Electric Vehicle charging whilst considering the management of on-street parking and potential obstructions to active travel, such as cabinets and trailing cables.

- 4.4 Traffic management measures are planned and designed in accordance with the P&MPDG.
- 4.5 Traffic orders are used to control the movement and access for all modes in accordance with the NM Strategy. The following five types of orders are used:
- Permanent TROs (PTROs)
 - Temporary TROs (TTROs)
 - Experimental TROs (ETROs)
 - Speed Limit Orders (SLOs)
 - Parking Place TRO's (PPO's)



- 4.6 The range of available traffic orders, their suitability and the order making process are described in P&MPDG Part 1 Chapter 12: Traffic Regulation Orders.
- 4.7 The process for third parties to request an Order can be found at <https://www.hertfordshire.gov.uk/services/highways-roads-and-pavements/changes-to-your-road/traffic-regulation-orders/permanent-traffic-regulation-orders.aspx#>

- 4.8 All requests for orders will be subject to:
- A check for compliance against the criteria set out within the Road Traffic Regulation Act
 - A check for LTP4 policy compliance
 - An assessment of network impact

5 Network Management to support Asset Management

- 5.1 The Asset Management category acknowledges that the highway needs to be managed whilst it is occupied for the purposes of improving or maintaining infrastructure in or adjacent to the highway
- 5.2 HCC, as highway authority, has a range of powers and duties to temporarily occupy the highway to maintain and improve it such that it is safe and fit for purpose.
- 5.3 Subject to agreements with HCC under Section 278 of the Highways Act (1980) third parties are also able to undertake works to the highway and to create new accesses to the highway that will be subsequently adopted under Section 38.
- 5.4 Utilities providers also have powers under the New Roads & Street Works Act (1991) to place, upgrade and maintain their plant within the highway.
- 5.5 Third parties, particularly adjacent developers, landowners, and leaseholders, may occupy parts of the highway to enable them to construct, improve and maintain their properties subject to licence from HCC as highway authority.
- 5.6 Typical licence requirements include:
- Materials or Equipment on the highway
 - Hoardings
 - Mobile Crane usage
 - Oversails
 - Scaffolding
 - Signs
 - Skips
 - Excavations
 - Temporary Bus Stop closures
- 5.7 Hertfordshire's permit scheme is a primary control for managing the occupation of the highway for asset management purposes. This is supported by an inspection regime run in accordance with NRSWA 1991. This function enables HCC to closely manage and monitor works carried out on the network, for both Statutory Undertakers and HCC's own works contractors

leading to enforcement action as appropriate.

- 5.8 Details of the scheme can be found at:
<https://www.hertfordshire.gov.uk/services/highways-roads-and-pavements/business-and-developer-information/permit-scheme/east-of-england-permit-scheme.aspx>
- 5.9 In assessing permit and licence applications all aspects of the proposed works shall be considered alongside other influences that may affect all travel modes on the highway to ensure that works are carried out within an optimum window of opportunity and with sufficient urgency, given the congestion and disruption they cause.
- 5.10 The typical factors considered when managing road space are described in the P&MPDG Part 1 Chapter 11: Network Management Requirements alongside the network management considerations for highway scheme design, planning programming and publicity.
- 5.11 Effective traffic management is key to minimising the congestion and safety impact of a scheme. Road closures and traffic control should be considered to be a last resort and their need must be proven and will be assessed on minimising overall disruption and safety. All traffic management must comply with Chapter 8 and Safety at Street Works and Road Works.
- 5.12 Where substantial works are planned on the network, HCC will, where necessary, use its powers under NRSWA (Section 58) to restrict further activities being undertaken on that section of the network that will damage the fabric of the highway assets and/or repeat the recent network disruption. Durations and the methodology of imposing a S58 restriction are set out in the Code of Practice for the Co-ordination of Street Works and Works for Road Purposes and Related Matters
- 5.13 The NM team reviews all proposals for works that require temporary traffic control (as defined in the Code of Practice for Safety at Street Works) to ensure policy compliance before providing consent. Licence application forms and guidance notes can be obtained from NMT or online at www.hertfordshire.gov.uk
- 5.14 The following table sets out how the Network Management Strategy supports LTP4 policies that are particularly related to the management of assets within and adjacent to the highway.

Asset Management Related Policies

Policy	Network Management Strategy
Policy 1: Transport User Hierarchy	Control occupation of the highway through planning, licencing, permitting and enforcement reflecting the needs of the transport user hierarchy. Consider and approve temporary traffic management proposals that reflect the transport user hierarchy.

	Temporary traffic signals shall optimise efficiency and ensure priorities reflect the transport user hierarchy. The priority for active travel modes during works is to avoid the need for diversions where possible, minimise any necessary diversion lengths, minimise journey time increases and ensure that any temporary measures are safe and suitable for those with restricted vision and for safe wheelchair and pram use. The priority for motorised traffic is to provide journey time reliability during road works.
Policy 4: Demand Management	Facilitate the upgrade of broadband and other communications infrastructure to support the reduction in the need for travel.
Policy 5; Development Management	Ensure that planning authorities and developers are encouraged through the P&MPDG to make sure that: • Planning takes account of development and community plans for the area and, where possible, makes provision for future developments, so as to avoid additional major works later to upgrade the infrastructure. • Designs enable both construction and future maintenance to be carried out in ways that minimise disruption for all highway users and the local community. • Assets are designed for long-term durability to reduce the need for highway occupation for works in subsequent years Request a Traffic Management Plan for all Major Works proposed on the Strategic Network, and other works as appropriate in accordance with P&MPDG Part 1 Chapter 11: Network Management Requirements
Policy 6: Accessibility	Ensure that temporary traffic management does not provide a physical barrier to those with restricted mobility and any temporary works are safe and suitable for those with restricted vision and for safe wheelchair and pram use.
Policy 7: Active Travel – Walking	Through the guidance given within the P&MPDG and the approvals process ensure that utilities' plant is

Policy 8: Active Travel - Cycling	located such that future maintenance will not disrupt active travel routes. Ensure timings for temporary signals are set to enable on-carriageway cyclists to clear the traffic management within the green phase.
Policy 9: Buses	Ensure that: • Temporary traffic management has minimum impact on scheduled bus services • Alternative bus routes are agreed, where necessary • Bus companies are given maximum notice of proposed road works.
Policy 16: Freight and Logistics	Clear advice shall be given to local planning authorities regarding the highways and freight implications of new development proposals. Construction management Plans, where requested, shall include agreed proposals for construction traffic routing and parking management
Policy 17: Road Safety	Consider temporary traffic management proposals in accordance with Chapter 8 of the TSRGD and 'Safety at Street Works and Road Works', undertake inspections and enforcement, as appropriate.
Policy 22: Asset Management	Ensure that the P&MPDG requires that highway assets are designed to: • Enable both construction and future maintenance to be carried out in ways that minimise disruption for all highway users and the local community. • For long-term durability to reduce the need for further works in subsequent years

6 Road Hierarchy

6.1 The following diagram sets out the national road hierarchy and the road classifications used.

6.1 HCC develops and manages its network hierarchy and classification system to align with the national system with the aim of encouraging traffic to use those parts of the network that are appropriate to its journey purpose.

6.2 The objective of these systems is to allocate journeys and vehicle types to the appropriate parts of the network, depending on their destination, purpose and/or size. They aim to maintain or improve amenity for those using the network and improve network safety by ensuring through traffic and heavy goods vehicles are kept off inappropriate parts of the network and away from

urban areas wherever possible.

Network Hierarchy & Classifications

A Class Roads Primary Roads	These form the Primary Route Network (PRN), providing the links between the most important traffic origins and destinations. They consist of motorways, trunk roads and the most important County 'A' roads. Other than motorways, primary roads can be identified by their green backed signs. Wherever possible, through traffic is encouraged to use these routes, and they form the HCC's advisory lorry route network. Primary roads will rarely be modified as a result of development proposals. In any such cases, early consultation with HCC, and National Highways in the case of motorways and trunk roads, will be required to determine design requirements.
A Class Roads Main Distributors	These roads consist of the County 'A' roads which do not form part of the PRN. There are two types: - • Rural main distributors connect the main towns with the PRN and link neighbouring towns within the PRN grid. • Urban main distributors are the main roads that distribute traffic within towns, around town centres and link town centres and main industrial areas to the PRN. Main distributors can be identified by their white-backed signs and a single carriageway standard will usually be adequate. Through traffic that could use the PRN will be discouraged from using main distributor roads. New access onto these roads would not normally be allowed. If access to or improvement of a main distributor is required as a result of a development proposal, early consultation with HCC will be necessary to obtain agreement and to determine design requirements.

B Class Roads Secondary Distributors	Rural secondary distributors connect the important rural settlements to each other and to the Main Distributor network. They are the main access roads to rural areas. Urban secondary distributors connect important urban neighbourhoods to each other and to the Main Distributor network. They also form the distributor routes through large residential areas. In both rural and urban areas, these routes will normally be designated 'B' roads and signed as such. It is appropriate for these to be bus routes.
C / L1 Class Roads Local Distributors	Rural Local Distributors are generally country lanes that give access to adjacent land, or roads that connect minor settlements. Urban Local Distributors generally provide routes through residential areas and are often estate roads. They provide the link between the Secondary Distributors and residential roads. Local Distributors do not have signed numbers and are likely to be bus routes.
L2 / U Class Roads Access Roads	Access roads provide direct access to housing and other developments. They consist of all roads not falling within the Primary Road, Main, Secondary or Local Distributor categories.
L2 / U Class Roads Industrial Roads	Industrial roads provide access to premises within predominantly industrial or commercial areas and link such areas to distributor roads and the wider highway network. Industrial roads are often unadopted (i.e., private streets). Such roads, which serve commercial development, will normally only be considered for adoption by the HCC if the premises served are in at least two freehold ownerships and where there is a clear benefit to the public.

- 6.3 Further details of road classification and reclassification can be found in the supporting document: *Hertfordshire County Council's procedure for Road Classification and Reclassification*

7 Place & Movement Matrix

- 7.1 Hertfordshire's 'Place and Movement,' (P&M) matrix has been designed to

complement the road hierarchy by recognising the different functionalities that the different parts of the highway network have.

- 7.2 All existing highways across the existing network in Hertfordshire have been assigned an appropriate category from the matrix
- 7.3 The understanding of local network operation and the needs of its users will be considered when all new or improved highways are assigned an appropriate P&M category
- 7.4 The P&M category shall provide the basis for prioritising and balancing the needs for the different highway users when managing the network.
- 7.5 The Place & Movement framework does not replace the road hierarchy but complements it by showing how development can be designed to fit into and strengthen the hierarchy.
- 7.6 This will improve safety, discourage the use of residential roads for through traffic, and create safer conditions for all users of residential roads, which is particularly important for vulnerable users such as pedestrians and cyclists
- 7.7 The following table shows how the P&M matrix maps onto the highway network hierarchy and classifications.

Place and Movement Matrix:

P&M: P1/M3	P&M: P2/M3	P&M: P3/M3
Class: A - Primary Distributor A - Urban Main Distributor	Class: A - Rural Main Distributor B - Rural Secondary Distributor	Class: U - Access
Speed Limit: Rural: National Semi-Urban: 50mph Urban: 40mph	Speed Limit: 50mph	Speed Limit: 20 mph
P&M: P1/M2	P&M: P2/M2	P&M: P3/M2
Class: A - Main Distributor B - Secondary Distributor	Class: A - Main Distributor B - Secondary Distributor C / L1 Local Distributor U / L2 Local Access	Class: A - Main Distributor B - Secondary Distributor C / L1 Local Distributor U / L2 Local Access
Speed Limit: Rural: National Semi-Urban: 50mph	Speed Limit: A & B: 40 mph C / L1: 30 mph U / L2: 20 mph	Speed Limit: 20 mph
P&M: P1 / M1	P&M: P2/M1	P&M: P3/M1
Class: U - Rural Local Distributor	Class: U / L2 Local Access	Class: U / L2 Local Access
Speed Limit: National	Speed Limit: 20 mph	Speed Limit: 20 mph

8 Destinations

8.1 Hertfordshire's settlements are categorised as follows:

- Primary Destination (Urban) as designated by the DfT.
- Main Towns (Urban) are all primary destinations and defined by Government Statistical Service as being >10,000 population).
- Important Rural Settlements (>4,000 and <10,000 population). HCC defines 'large' settlement as above 4000 (Herts Insight).
- Other Rural Settlements (<4000 population)

8.2 The following table sets out the allocation of the categories to Hertfordshire's settlements.

Primary Destination	Main Towns	Important Rural Settlements
Hemel Hempstead Hertford St Albans Stevenage Watford	Abbots Langley Baldock Berkhamsted Bishops Stortford Borehamwood Broxbourne Bushey Cheshunt Croxley Green Harpenden Hatfield Hitchin Hoddesdon Letchworth Potters Bar Rickmansworth Royston South Oxhey Tring Waltham Cross Ware Welwyn Garden City	Bovingdon Bricket Wood Buntingford Carpenter's Park Chorleywood Cuffley Kings Langley Knebworth London Colney Radlett Redbourn Sawbridgeworth Wheathampstead

9 Network Signage

9.1 Clear and effective signing is essential for all network users, vehicle users, equestrians, cyclists, and pedestrians alike. Signing is important for the economy, especially tourism, but ill-considered use of direction signs can

result in unacceptable street clutter to the detriment of users and the local environment.

9.2 The P&MPDG Part 3 Chapter 18: Planning Signs and Road Markings sets out the requirements for Scheme Promoters to complete a Signage Strategy Plan and gain agreement from HCC before starting detailed design of any signage scheme.

9.3 The Signage Strategy Plan should aim to:

- Promote the efficient working and enforcement of traffic regulations.
- Aid traffic control.
- Aid road safety.
- Reduce visual intrusion by choosing sign location and method of erection appropriate to the context and setting.
- Avoid unnecessary sign clutter.



10 Integrated Transport Control Centre and Real-Time Communications

10.1 HCC shall operate its state-of-the-art Integrated Transport Control Centre (ITCC) to monitor and manage the network in real-time, providing information to all users of the highway, other traffic authorities and the media.

10.2 The ITCC shall draw on inputs from a range of technology including Closed Circuit Television (CCTV), journey time cameras, traffic counters, and to feed into the ITCC Operations Hub.

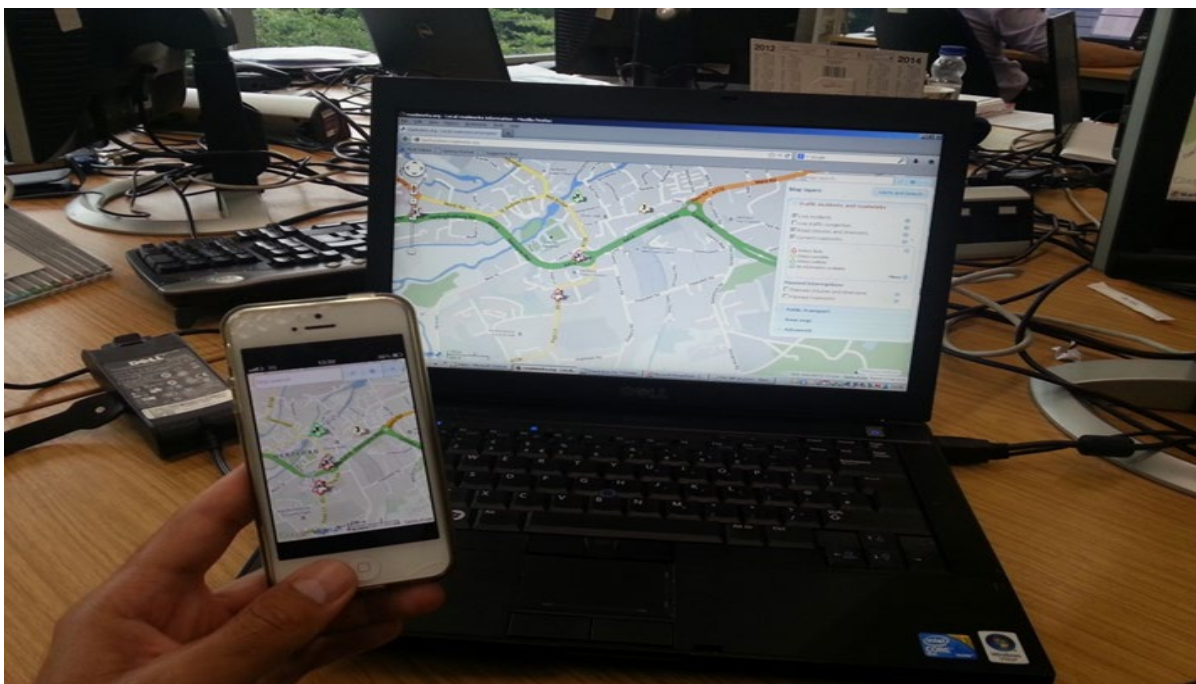
10.3 The incoming data shall be used by ITCC staff to determine the cause of network disruption, initiate pre-prepared control plans, manage the network in real-time and provide information to stakeholders

10.4 For example, the ITCC staff will adjust traffic light phasing, display information on Variable Message Signs (VMS) and alert the media in response to an incident on the network.

10.5 The ITCC will monitor and manage defined strategic diversion routes with

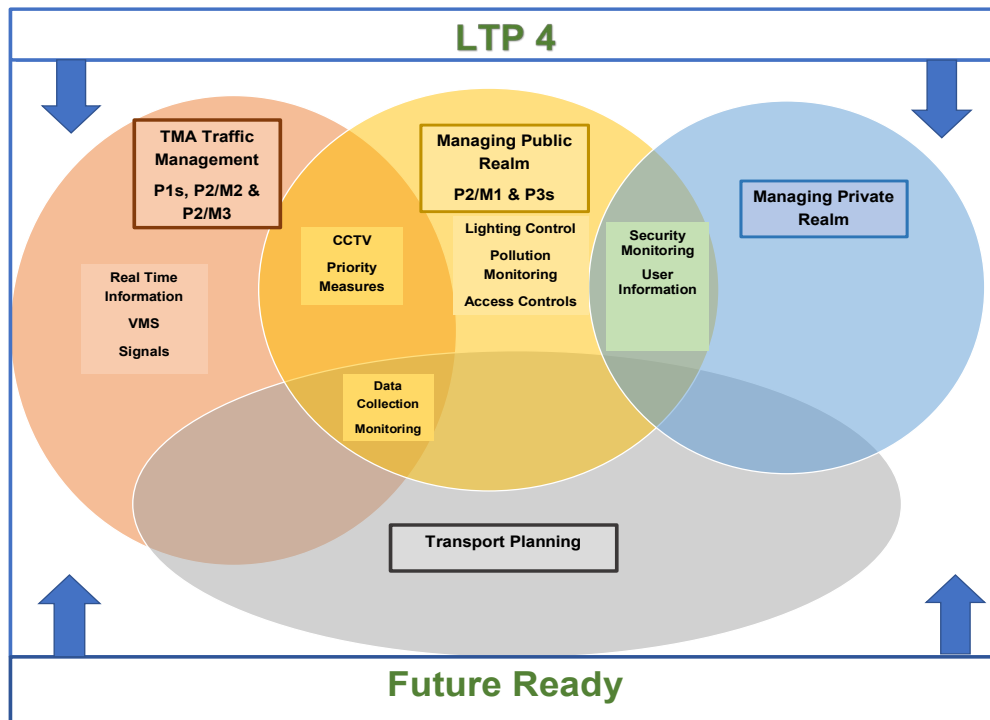
National Highways and other stakeholders and consider implementing specific plans and communication methods such as VMS (mobile included) at decision-making nodes to control traffic by means of pre-programmed 'emergency' message sets. Pre-planned diversion routes and event signing plans will be made available so the ITCC can implement control interventions based on agreed protocols. This can be achieved through linking systems such as *UTMC*.

- 10.6 HCC shall ensure that live updates on road closures are sent from the roadside or from the ITCC directly to sat-nav provider's systems using *the roadworks.pro Real-Time* system, which enables routing to be updated more rapidly and helps drivers to divert to an alternative route before encountering a road closure.



11 Intelligent Transport Systems (ITS)

- 11.1 Network management is a key user of ITS and its objectives shall be reflected as major requirements within HCC's ITS strategy



- 11.2 ITS will be used to support HCC's Network Management Duty for the safe expeditious movement of traffic along high movement, low place P&M corridors, whilst providing priority measures for passenger transport and safe crossings for active travel modes.
- 11.3 Within the public realm of high place importance, ITS will enable safe and convenient active travel with cleaner air and less noise through controlling access for motor vehicles
- 11.4 The key Network Management objectives to be delivered through HCC's ITS Strategy are:
- Improve highway network management for all users through dynamic, responsive traffic management, including managing and controlling access to Active Travel Links and Sustainable Travel Links.
 - Assist in the rapid and effective response to incidents, thereby minimising disruption to the transport network.
 - Improve road safety, by reducing collisions, casualties, and deaths through the provision of speed and traffic management information and controls.
 - Provide better travel and traveller information, helping to match supply and demand by providing better information, so that travelers can make informed choices on when and how to travel.
 - Improve passenger transport by enabling more reliable services.

- Support the efficiency of the road freight industry through dynamic routing information.
- Undertake camera enforcement of moving traffic and bus lane contraventions to:
 - * Manage the traffic network to ensure expeditious movement of traffic, (including pedestrians and cyclists), as required under the Network Management Duty in Section 16 of the TMA
 - * Improve road safety
 - * Improve the local environment, especially carbon reduction
 - * Improve the quality and accessibility of passenger transport and managing and reconciling the competing demands for road space

12 Programming Constraints for Temporary Traffic Management

- 12.1 HCC will not accept works starting before the expiry of the notice period, except where an early start has been agreed with HCC and any other interested parties. Permission for an early start will not be withheld unreasonably.
- 12.2 All overnight works and any associated restrictions shall be agreed or directed by the NM Team. Night working may be requested by the NM team or be part of the application from the works promoter. Nightworks may be required:
- To provide a safer working environment for construction personnel, where the traffic management required to carry out the works would not be allowed during the normal working day
 - To minimise the impact of congestion to the travelling public
 - Where restrictions have been placed by other authorities e.g., for railway possessions, etc.
- 12.3 Any works promoter proposing to work at night at night or being required to work at night, shall approach the District Council Environmental Health Office at the earliest opportunity and obtain prior consent under s61 of the Control of Pollution Act 1974.
- 12.4 The works promoter will need to provide details of the activities proposed including noise levels, working hours, traffic management arrangements, an accurate programme of the works and operations proposed, and an explanation of why the works need to be carried out at night.

13 Enforcement to control Network Occupation

- 13.1 Section 130 of the Highways Act 1980 imposes a duty on HCC to assert and protect the rights of the public to the use and enjoyment of, and prevent so far as possible, the unauthorised stopping up of or encroachment/obstruction of, all/any part of its network. It allows HCC to deal with an obstruction of the

highway, defined as “something where a person wilfully and without lawful authority obstructs the whole or part of the highway from public use”. An obstruction is a criminal offence.

- 13.2 Any encroachment, such as where gardens extend over a grass verge of the highway also amounts to an unlawful obstruction. Encroachments are included within the definition of “obstruction” for the purposes of this strategy.
- 13.3 The primary aim of licencing and enforcement in Hertfordshire is to ensure that the network remains in a condition that is safe, efficient, and easy to use by the public balancing this with the need of individuals and businesses to access the highway.
- 13.4 The powers available for enforcement include: statutory notices, improvement and prohibition notices, suspension or revocation of licences, variation of licence conditions, injunctions and the carrying out of remedial works.
- 13.5 HCC believes in firm but fair regulation and will implement this by being:
 - Proportional in its application of the law and in securing compliance.
 - Consistent in its approach.
 - Transparent about how the service operates and what those regulated may expect from the service.
 - Targeted in its enforcement action.
- 13.6 Hertfordshire County Council as a Highway Authority will take an assessment of any defects reported and will balance out appropriate enforcement action with the severity of said defect.
- 13.7 HCC regards prevention as being a better cure, thus offers information and advice to those requiring it. If there is a need for the Authority to carry out its enforcement obligations under the Highways Act 1980, HCC will initially use advice and persuasion to deal with matters informally, and will seek to secure co-operation, thus avoiding bureaucracy or excessive cost. Individuals and businesses are encouraged to consider the public’s health and safety, the community, and the environment when impacting on the highway.
- 13.8 Only where necessary will HCC utilise direct enforcement action or prosecution proceedings.
- 13.9 Where HCC has carried out remedial works, it will seek to recover the full costs incurred from those responsible
- 13.10 In performing its duty, HCC may institute legal proceedings in their own name, defend any legal proceedings and generally take such steps as they deem expedient. Any decision for enforcement by HCC will also be subject to the Wednesbury test of reasonableness (i.e., a decision so unreasonable that no reasonable authority would have made it).
- 13.11 What steps may be reasonably expedient will depend upon the individual facts

considering the nature and affect to the public of the obstruction or nuisance including whether it is dangerous or likely to be dangerous and whether it impedes or is likely to impede current use and enjoyment of the highway. HCC and government policies and guidance will also assist in determining the expedient steps to be taken for enforcement.

- 13.12 HCC recognises the use of the criminal process to institute a prosecution as an important part of enforcement. It will use discretion in making such a decision because other approaches to enforcement may equally or more effectively promote compliance with legislation. Only where circumstances warrant will HCC pursue prosecution. All investigations into alleged breaches of legislation will follow best professional practice.
- 13.13 HCC will consider prosecution when one or more of the following applies:
- That there is sufficient, admissible, and reliable evidence that the offence has been committed and there is a realistic prospect of conviction.
 - There is a risk to safety of the public or of environmental damage as a consequence of the breach.
 - The breach was due to a deliberate act or following recklessness or neglect.
 - The approach of the offender, e.g., repeated breaches.
 - It is appropriate in the circumstances to draw general attention to the need for compliance with the law.
- 13.14 The courts have considerable scope to punish offenders and deter others. HCC will seek to make the courts aware of the degree of gravity HCC attaches to the offences. They will also actively seek to ensure that the local community is made aware of action taken to convict persons who are in breach of their legal obligations.
- 13.15 HCC will always seek to recover the costs of investigation and court proceedings.
- 13.16 If HCC believes that works are causing an obstruction by occupying more of the network, or taking longer to complete the works, than is reasonable, it may issue a notice under NRSWA (section 66). This notice can direct those working on the network to, either reduce the obstruction or to remove it altogether. HCC will require compliance within 24 hours, or a period specified in the notice. Should this notice not be complied with, the Authority retains the right to remove the obstruction and make any outstanding works safe.
- 13.17 If there are occasions where traffic management is left in place with no works apparent on site (for example where concrete or any other material is curing), HCC may require the works promoter to provide information boards that inform the public of the reasons.

14 Future Ready Network

- 14.1 Over the next 20 years, forecasts suggest there will be a steady trend of economic growth and rising population, creating additional pressures on HCC's

transport networks. At the same time, industry and commerce will stress the need to avoid the costs of inefficiency caused by congestion and unreliability, while the public will demand a higher quality journey experience and increased mobility.

14.2 Trends that are likely to impact network management in the near future are:

- Increases in active travel
- The wide introduction of electric powered vehicles including bikes and scooters
- The mainstreaming of Mobility as a Service (MaaS) whereby users buy transport services as packages based on their needs instead of buying the means of transport
- The introduction of more common data formats that is accessible to all and improvements in inter-system communications which will improve traffic management controls, travel planning, the making of travel choices, integrated ticketing, whilst facilitating the introduction of new vehicle technologies.
- Connected Vehicles which use technology to either communicate with each other, connect with traffic signals, signs, and other road items, or obtain data from a cloud.
- Autonomous Vehicles which use technology to steer, accelerate, and brake with little to no human input.

14.3 The transport technology revolution will improve network efficiency and safety, but in itself, may not remove or reduce network congestion because the technology is also enabling and liberating. For example, the young and the elderly who are not currently sole occupants of private cars will be able to become sole occupants of autonomous vehicles, thereby adding to overall demand.

14.4 The growth agenda is aimed at delivering 100,000 new residential units and 100,000 new jobs across Hertfordshire over the next 15 years. To meet these needs HCC will need to move away from traditional network management solutions and also consider other ways to provide passenger information and network co-ordination, allowing road users to make informed travel choices and encouraging modal shift.

14.5 Whilst Network management will need to facilitate the transport technology revolution to secure the network efficiencies, it also needs to support the provision of quality passenger transport such as the proposed Mass Rapid Transit System for Hertfordshire (which in itself will demand road space) and the continued priority for active travel, so as to manage the demand for independent, single occupancy vehicles.

15 Electric Vehicles

15.1 The allocation and management of on-street parking will become a significant challenge if widespread on-street charging from fixed charging points is introduced.

- 15.2 HCC's current position, set out in HCC's 'EV Charging Strategy,' is that it will not enable large scale roll-out of on-street EV chargers (except for limited users / limited circumstances) and will instead support residents without access to a private drive or garage to access alternative charging facilities in local car parks and rapid EV charging stations
- 15.3 Induction charging is potentially going to be the next generation of technology to replace fixed point charging. The technology works similarly to how wireless charging devices send power to phones. Copper loops are installed under the paved surface to transfer energy from the electrical grid to receivers that can be mounted underneath any electric vehicle, in turn, automatically charging the vehicle's battery.
- 15.4 Managing the accommodation of the introduction and ongoing maintenance of induction loops will become a major 'Network Management to support Asset Management' activity if induction charging is accepted within the public highway.
- 15.5 The demand for power is likely to require supply upgrades that may result in programmes of cable works within the highway, which again will require network management oversight.

16 MaaS and DRT

- 16.1 MaaS in its purist form is an on-demand transportation distribution model where a single digital platform offers riders the most efficient, seamless connection from point A to point B by combining and coordinating various modes of transportation services.
- 16.2 A good MaaS application (app) will require real time highway network data to provide its customers accurate and reliable guidance.
- 16.3 HCC needs to consider not just the digital platform and the modes of transport a MaaS app is supporting, but also the network management and highway infrastructure consequences
- 16.4 MaaS is often considered as a concept for the movement of people, but HCC is interested in the movement of people and goods given that so many of the opportunities and challenges are common and will need a common approach. For example, it does not matter whether it is passengers, parcels or take-away meals that are being picked-up or dropped-off, the potential damage to highway assets and disruption to the network from Demand Responsive Transportation will be the same if left unconsidered and unmanaged.
- 16.5 HCC can potentially take three roles in the emergence of MaaS, viz.-
- Promote – Pro-actively take the initiative
 - Support – Active collaboration to gain added value for Hertfordshire
 - Accommodate – A defensive role managing and reacting to protect highway assets and deliver HCC's Network Management Duty
- 16.6 HCC has yet to establish whether it wishes to take a promoting role for MaaS or the degree that it wishes to support MaaS as a means to delivering LTP Policies.

- 16.7 Whatever blended approach HCC may wish to take, MaaS and DRT are already emerging. In any event, HCC will not have a monopoly control over the whole industry of apps and demand related travel services, so there will always be the need to protect the highway assets and manage the network and, some of these measures can begin to be put in place sooner rather than later, without necessarily being detrimental to the future.
- 16.8 The key network management strategies that can be implemented in the short-term to accommodate MaaS and DRT whilst supporting LTP policies include:
- Protect priority for buses through the introduction of unattended camera enforcement to minimise delays caused by use by unauthorised vehicles
 - Kerbside management through physical measures, Traffic Regulation Orders, and enforcement to minimise unsafe and disrupting pick-up and drop-offs and to protect verges and footways.
 - Collaborate with Satnav and MaaS providers to introduce Geofencing (the use of GPS technology to create a virtual boundary) to guide where DRT vehicles should or should not go and / or stop.
 - Share real-time information between HCC's Integrated Transport Control centre and organisations involved in the provision of Satnav and MaaS and DRT services
 - Integrate technology aspects within HCC's ITS Strategy

17 Network Management Strategy Performance

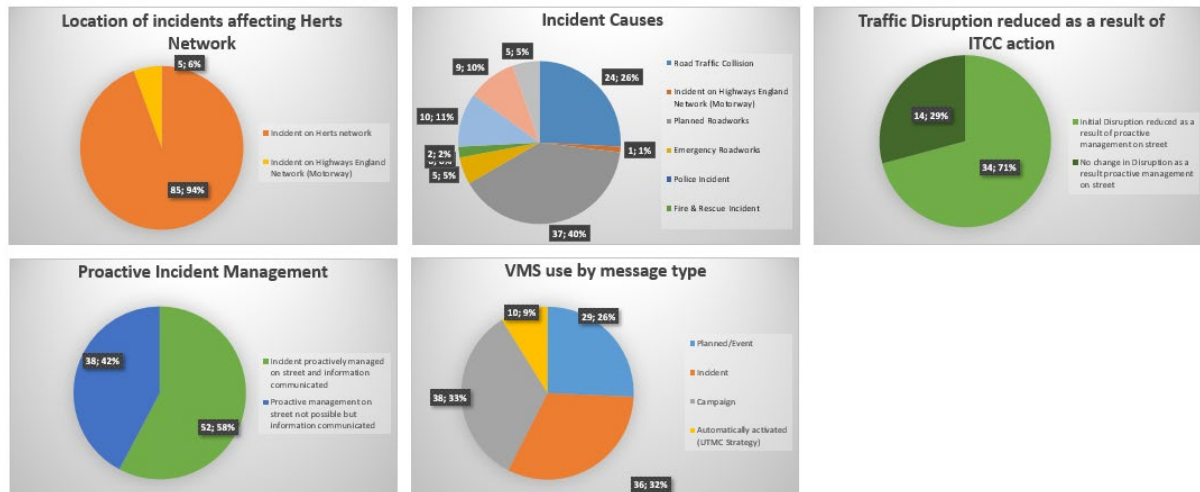
- 17.1 To effectively deliver the NMS it must have a clearly defined set of objectives that give direction and key performance indicators (KPI's) that can be measured. To this end the NMS main objectives are:
- To act with parity providing fairness, inclusivity, and transparency.
 - Ensure the expeditious movement of traffic. (All modes)
 - Reduce the environmental impact of the network
 - Be forward looking in relation to current and future technologies and trends.
 - Constantly work to improve the permit scheme.
 - Always look how better to engage with all users of the network.
- 17.2 To measure service demand the following set of KPI's are used:
- Average journey time on key routes during the morning peak (minutes per mile)
 - Change in area wide kilometrage on the Local Road Network
 - Integrated Transport Control Centre network interventions (%)
 - Days occupation on the highway
 - Value of deemed permits (£)
- 17.3 The measures below have been developed to evidence the benefits the ITCC is delivering. They are presented within HCC'S Quarterly Service performance

review. These measures are reviewed, and actions agreed.

- Location of Incidents affecting Herts Network
- Incident Cause
- Traffic Disruption reduced as a result of ITCC action
- Proactive Incident Management
- VMS use by message Type

ITCC Quarterly Service Monitors

Reporting Quarter: Jan - Mar 2020



Example of Performance Reporting

18 Network Management Strategy Development

- 18.1 This document articulates Hertfordshire's Network Management Strategy based on current and emerging policies and practices. However, the art of network management is dynamic and needs to be responsive to emerging policy drivers and local needs.
- 18.2 As such it is intended that the published Network Management becomes a live document to capture the evolving strategy as and when it is developed.
- 18.3 The following table sets out the initiatives for strategy development currently being considered for development.

Initiative	Comments
Lane Rental	• Develop business case and implement scheme in readiness for new highways service in 2025
Intelligent Transport Systems	• Support the development and publication of a holistic ITS strategy ensuring NM objectives are met • Review technologies
Alignment of Hierarchies	• Review mapping work undertaken to date. • Reconcile to Network resilience and maintenance intervention network hierarchy • Consider whether there is a relationship

	between network management and Priority Transport Corridors as they are a corridor not a route - Consider the frequency of network reviews and their criteria - Decide what content sits in NM strategy and what sits in P&MPDG
Parking Management	HCC to consider whether it wants to take a more active or emphatic role in strategy development and parking management.
Use of permitting and enforcement on Active Travel Links and Sustainable Travel Links	ATLs can be Footpaths, Bridleways, Restricted Byways. STLs can be byways open to all traffic. Proposals need to be developed to protect them from obstruction, encroachment, and prolonged occupation by works.
Freight & Logistics	- HCC to consider articulating a more emphatic role in strategy development and consider applying more tools - Consider preparations for being future ready
Transport (mobility) Hubs	- Consider any NM constraints that will influence which parts of an interchange should be public highway - Consider what role network management has in the operation of interchanges (public and non-public highway)
Performance Monitoring	Review in line with LTP5 development, focusing on journey reliability and ensure they are SMART
Climate Resilience	There is a Winter Service Operational Plan. Consider whether this should be complemented by a formal plan for managing flood, storm, and heat events?
Digitisation of TROs	Develop business case and take forward within new highways service from 2024

19 Supporting Documents

- Annual Winter Operational Service Plan
- Hertfordshire County Council's procedure for Road Classification and Reclassification (2022)
- Hertfordshire County Council's Approach to Camera Enforcement of Moving Traffic and Bus Lane Contraventions (2023)
- Place & Movement Planning & Design Guide:
 - * Part 1, Chapter 3 – The Scheme Promotion and Development Management Process
 - * Part 1, Chapter 12 – Network Management Requirements
 - * Part 1, Chapter 13 – Traffic Regulation Orders
 - * Part 1, Chapter 14 – Public Utilities

- * Part 2, Chapter 5 – Place & Movement
- * Part 3, Chapter 7 – Planning Parking
- * Part 3, Chapter 18 – Planning Signs & Lines
- * Part 3, Chapter 19 – Planning ITS